

exhibiting a modulus of about 350 kpsi or greater, and wherein said plastic composite material is filled with viscoelastic damping particles, anisotropic reinforcing agents, or combinations thereof.

REMARKS

In view of the following discussion, the applicant's submit that none of the claims now pending in the application are anticipated under the provisions of 35 U. S. C. § 102, or obvious under the provisions of 35 U. S. C. § 103. Furthermore, the applicants also submit that all of these claims now satisfy the requirements of 35 U. S. C. § 112. Thus, the applicants believe that all of these claims are in allowable form.

Rejections

A. 35 U. S. C. § 112, second paragraph

1. Claims 5 and 7-8 rejected under 35 U. S. C. § 112, second paragraph

Claims 5 and 7-8 are rejected under 35 U. S. C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the Examiner states that claims 5 and 7 are rejected for their dependence on claim 4, a claim rejected under 35 U. S. C. § 112, second paragraph (which has been canceled by applicants with this amendment). Applicants have amended claims 5 and 7 to depend from claim 1.

In addition, the Examiner states that claim 8 is rejected under 35 U. S. C. § 112, second paragraph due to lack of proper antecedent basis for the phrase "one or more." As such, claim 8 has been amended to replace the phrase "one or more" with the phrase "at least one." Claim 8 depends from claim 1, which has proper antecedent basis for the phrase "at least one".

In view of the above amendments, the basis for the examiner's rejection of claims 5 and 7-8 pursuant to 35 U. S. C. § 112, second paragraph, has been removed. Therefore it is respectfully requested that this rejection be withdrawn.

B. 35 U. S. C. § 102(b)

1. Claim 19 unpatentable over Woo

Claim 19 is rejected under 35 U. S. C. § 102(b) as being anticipated by Woo (U.S. Patent No. 5,458,940, issued October 17, 1995). Applicants submit that this claim is not anticipated by this reference.

Applicants invention as recited in amended claim 19 is directed to an apparatus comprising a data storage disk (see the specification, at page 3, lines 19-24). In particular, applicant's apparatus as recited in amended claim 19 includes the following features:

"An apparatus, comprising:

a disk drive spindle motor; and

at least one data storage disk mounted on said disk drive spindle wherein said storage disk comprises at least one plastic composite material exhibiting a modulus of about 350 kpsi or greater, wherein said plastic composite material is filled with viscoelastic damping particles, anisotropic reinforcing agents, or combinations thereof."

In applicant's amended claim 19, a data storage disk is mounted on a disk drive spindle (see the specification at page 8, lines 3-5). The data storage disk comprises at least one plastic composite material exhibiting a modulus of about 350 kpsi or greater, wherein the plastic composite material is filled with viscoelastic damping particles, anisotropic reinforcing agents, or combinations thereof (see the specification at page 4, lines 1-3).

Woo discloses a high-speed optical disk (see Woo at column 1, lines 10-11). The disk includes a dampening layer 22 (see Woo at FIG. 2 and column 2, line 36). The dampening layer 22 comprises two separate material layers: an adhesive layer 24 and a polymeric film layer 26 (see Woo at column 2, lines 39-41). The polymeric film layer 26 is secured to a substrate 12 with the adhesive layer 24 (see Woo at column 2, lines 39-42). The adhesive layer 24 along with the polymeric film layer 26 function to dampen the vibrational amplitude of the disk (see Woo at column 2, lines 53-56).

Woo does not describe or suggest applicant's invention as recited in amended claim 19, in which a data storage disk comprises at least one plastic composite material exhibiting a modulus of about 350 kpsi or greater, wherein the plastic composite material is filled with viscoelastic damping particles, anisotropic reinforcing agents, or combinations thereof. Rather, Woo only teaches an optical disk having a dampening layer composed of a separate adhesive layer and a separate polymeric film layer. No plastic composite materials are described or suggested in Woo. Thus, applicant's invention, as recited in amended claim 19, is patentable over Woo.

2. Claims 1-2 unpatentable over Evans et al.

Claims 1-2 are rejected under 35 U. S. C. § 102(b) as being anticipated by Evans et al. (U.S. Patent No. 4,680,211, issued July 14, 1987). Applicants submit that these claims are not anticipated by this reference.

Applicants invention as recited in amended claims 1-2 is directed to a substrate for use in a data storage system (see the specification, at page 3, lines 19-24). In particular, applicant's invention as recited in amended claim 1 includes the following features:

"A substrate for use in a data storage system, comprising:
at least one plastic composite material exhibiting a modulus of about 350 kpsi or greater;
wherein said plastic composite material is filled with viscoelastic damping particles, anisotropic reinforcing agents, or combinations thereof."

In applicant's amended claim 1, a substrate for use in a data storage disk system is described (see the specification at page 3, lines 19-20). The substrate comprises at least one plastic composite material exhibiting a modulus of about 350 kpsi or greater, wherein the plastic composite material is filled with viscoelastic damping particles, anisotropic reinforcing agents, or combinations thereof (see the specification at page 4, lines 1-3).

Evans et al. discloses recording disks (see Evans et al. at column 1, line 6). The recording disks include a substrate comprised of a copolymer resin having a high elastic modulus (see Evans et al. at Table 1 and column 4, lines 32-33). The copolymer resin is formed by reacting vinyl, aromatic monomers (see Evans et al. at column 2, lines 50-57).

Evans et al. does not describe or suggest applicant's invention as recited in amended claims 1-2, in which a substrate comprises at least one plastic composite material exhibiting a modulus of about 350 kpsi or greater, wherein the plastic composite material is filled with viscoelastic damping particles, anisotropic reinforcing agents, or combinations thereof. Rather, Evans et al. only teaches a recording disk formed of a copolymer resin having a high elastic

modulus. No plastic composite materials filled with viscoelastic damping particles, anisotropic reinforcing agents, or combinations thereof are described or suggested in Evans et al. Thus, applicant's method, as recited in amended claims 1-2, is patentable over Evans et al.

3. Claims 1-2, 5, 7, 11-13 and 19 unpatentable over Kuromiya et al.

Claims 1-2, 5, 7, 11-13 and 19 are rejected under 35 U. S. C. § 102(b) as being anticipated by Kuromiya et al. (U.S. Patent No. 5,585,989 issued December 17, 1996). Applicants submit that these claims are not anticipated by this reference.

Kuromiya et al. discloses magnetic disk substrates formed of thermoplastic norborene resins (see Kuromiya et al. at column 1, lines 5-6). Spherical-shaped filler particles are added to the thermoplastic norborene resins to provide a high modulus of elasticity (see Kuromiya et al. at column 5, lines 37-38 and 58-59).

Kuromiya et al. does not describe or suggest applicant's invention recited in amended claims 1-2, 5, 7, 11-13 and 19, in which the substrate comprises at least one plastic composite material exhibiting a modulus of about 350 kpsi or greater, wherein the plastic composite material is filled with viscoelastic damping particles, anisotropic reinforcing agents, or combinations thereof. Rather, Kuromiya et al. only teaches the use of spherical-shaped filler particles to increase the modulus of thermoplastic norborene resins. Furthermore, Kuromiya et al. specifies that "the filler material have a spherical shape and the closer it is to the perfect round shape the more preferable" (see Kuromiya et al. at column 5, lines 58-60)." Clearly, Kuromiya teaches away from applicant's invention in which the plastic composite material comprises anisotropic reinforcing agents. Thus, applicant's invention, as recited in amended claims 1-2, 5, 7, 11-13 and 19, is patentable over Kuromiya et al.

C. 35 U. S. C. § 103(a)

1. Claims 3, 8-9 and 14-17 unpatentable over Kuromiya et al. in view of Landin et al.

Claims 3, 8-9 and 14-17 are rejected under 35 U. S. C. § 103(a) as being unpatentable over Kuromiya et al. (U.S. Patent No. 5,585,989 issued December 17, 1996) in view of Landin et al. (Re. U.S. Patent No. Re 36, 806 reissued August 1, 2000). Applicants submit that these claims are not rendered obvious by the combination of these references.

Claims 3, 8-9 and 14-17 depend from amended claims 1 and 19, and recite limitations directed to the use of multiple composite layers. The Examiner applied Kuromiya et al. to claims 3, 8-9 and 14-17 as discussed above for claims 1-2, 5, 7, 11-13 and 19. The Examiner concedes that Kuromiya et al. does not teach the use of multiple composite layers. As such, the Examiner cites Landin et al. for a teaching of multiple composite layers.

Landin et al. discloses a method for damping a rotatable storage article (see Landin et al. at column 1, lines 10-12). The rotatable storage article is damped with one or more internal damping layers (see Landin et al. at column 5, lines 2-3). The one or more internal damping layers are positioned between the structural material of the rotatable storage article (see Landin et al. at column 5, lines 4-10). The one or more internal damping layers are constructed of a viscoelastic rubber, a thermoplastic material, or a thermosetting resin (see Landin et al. at column 6, line 42 to column 7, line 17). Fibrous or particulate material may be added to the damping material (see Landin et al. at column 7, lines 23-48).

Landin et al. does not describe or suggest applicant's invention recited in claims 3, 8-9 and 14-17, in which the substrate comprises at least one plastic composite material exhibiting a modulus of about 350 kpsi or greater, wherein the plastic composite material is filled with viscoelastic damping particles.

anisotropic reinforcing agents, or combinations thereof. Rather, Landin et al. teaches the inverse of the applicant's invention in which the damping layer comprises a non-rigid viscoelastic rubber or resin matrix, to which fibrous or particulate material may be added to improve damping further. In other words, Landin et al. does not teach filling a rigid plastic composite material with viscoelastic particles (see the specification at page 4, lines 8-16), but rather teaches the use of a non-rigid viscoelastic layer that includes fibrous or particulate material for improved damping. Thus, applicant's invention, as recited in claims 3, 8-9 and 14-17, is patentable over Landin et al.

Since Kuromiya et al. only teaches the use of spherical-shaped filler particles in thermoplastic norborene resins, and Landin et al. teaches the inverse of the applicant's invention, i.e., damping layers that are constructed of a non-rigid viscoelastic rubber or resin that may be filled with fibrous or particulate material, the combination of these references does not describe or suggest applicant's invention. In particular, applicant's invention as recited in claims 3, 8-9 and 14-17, in which the substrate comprises at least one plastic composite material exhibiting a modulus of about 350 kpsi or greater, wherein the plastic composite material is filled with viscoelastic damping particles, anisotropic reinforcing agents, or combinations thereof. Thus, applicant's invention, as recited in claims 3, 8-9 and 14-17 is patentable over the combination of these references.

Conclusion

Thus, the applicants submit that none of the claims, presently in the application, are anticipated under the provisions of 35 U. S. C. § 102, or obvious under the provisions of 35 U. S. C. § 103. Furthermore, the applicants also submit that all of these claims now satisfy the requirements of 35 U. S. C. § 112. Consequently, the applicants believe that all of these claims are presently in

condition for allowance. Accordingly, the applicants earnestly solicit reconsideration of this application and its swift passage to issue.

If, however, the Examiner believes that any unresolved issues still exist in any of these claims that require a continuance of the adverse first action therefor, it is requested that the Examiner telephone Mr. James Sheridan, at (650) 320-0000, so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

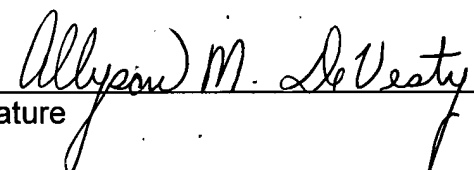
Respectfully submitted,

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CERTIFICATE OF MAILING UNDER 37 C. F. R. §1.8(a)

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